Tanta University

Department: Computers and Control Eng.
Total Marks: 20 Marks

Faculty of Engineering

Course Title: **Pattern Recognition &Image Processing** Course Code: CCE4130 Year: 4th Computers
Date: **Nov. 2015 (Mid term)** Allowed time: **1:15 hr** No. of Pages: (1)

Remarks: **Please Read the question more than once to fully understand it before you start solving.**

Q.1) Explain the categories of digital storage for image processing. **(4 Marks)**

Q.2) Perceived brightness by a human eye is not a simple function of intensity; explain two phenomena demonstrate this fact. **(4 Marks)**

Q.3) Consider the 2-bit image segment shown below.
Let V = {1, 2}, compute the lengths of the shortest 4-, 8-, and m-path between **p** and **q**. If a particular path does not exist between these two points, explain why.

			q
3	1	2	(1)
2	2	0	0
2	3	1	1
P (1)	1	1	2

(4 Marks)

Q.4) Determine if each of the following statements is true or not. If it is not, modify it to become true.

a) If two pixels are 4-adjacent then they are 8-adjacent.
b) Infrared ray imaging are typically used in exploring minerals and oil.
c) Image quantization is determined by the sensor arrangement used to generate the image.
d) In digital image processing, when dealing with image transform, it is always to formulate the transform using matrix multiplications.
e) Negative third moment of an image means pixel values have bias to values smaller than the mean.

(5 Marks)

Q.5) Consider the image cameraman.tif, write the appropriate Matlab commands to:
a) Determine its type, size in pixels and data class type.
b) Find the max pixel value in the image.
c) Rotate the image with 50° clockwise.

(3 Marks)

Good luck all

Course Instructor: Dr. Mahmoud Alshewimy